REMARKS

The application has been reviewed in light of the final Office Action dated June 28, 2007. Claims 9-12 are pending, with claims 1-8 having previously been canceled, without prejudice or disclaimer. By this Amendment, claim 9 has been amended to clarify the claimed subject matter. Accordingly, claims 9-12 are presented for reconsideration, with claims 9 and 11 being in independent form.

Claims 9 and 10 were rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite.

By this Amendment, claim 9 has been amended to clarify the claim to state: "setting a second recording power for formatting which is equal to or lower than the first recording power for recording data determined as the result of the power calibration, and formatting the medium by said drive at said second recording power for formatting which is equal to or lower than the first recording power for recording data."

Support for the claim amendment can be found in paragraph [0019].

Applicant respectfully submits that the claim amendment does not introduce new matter or new issues, but is merely for clarifying the claimed subject matter.

Withdrawal of the rejection under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 9 and 10 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by U.S. Patent No. 5,592,463 to Muramatsu et al. Claims 9 and 10 were rejected under 35 U.S.C. § 102(b) as purportedly anticipated by Takahashi (JP 11-045440). Claims 11 and 12 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Muramatsu or Takahashi, in view of

U.S. Patent No. 6,320,832 to Nakao et al. or U.S. Patent No. 5,841,747 to Kubota et al. Claims 9-12 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Tsujino (JP 8-77633) in view of Nakao or Kubota.

Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 9 and 11 are patentable over the cited art, for at least the following reasons.

This application relates to formatting of an optical information recording medium.

Rewritable or recordable optical discs typically need to be formatted prior to initial use of the disc. The term "formatting" has a well-established (albeit general) meaning in the art. During formatting, assorted format information, such as indicating file structure and logical format, is recorded in designated areas of the disc reserved for such format information and not used for recording user data. Such format information is read before recording or reproduction of user data is performed.

Applicant devised an improved approach in which a recording power used for formatting an optical information recording medium is equal to or lower than the recording power to be used for recording data on the medium (claim 9 of the present application). For example, such recording power used for formatting the optical information recording medium can be determined by multiplying the recording power to be used for recording data by a coefficient of 1 or less (claim 11 of the present application).

Muramatsu, as understood by applicant, proposes an approach for determining optimum power for recording user data (audio information) on a recordable optical disc, by performing test recording in a Power Calibration Area (PCA) at an inner circumference of the disc, to

determine said optimum recording power, and the user data is recorded, using said optimum recording power, at the beginning of a head portion of the user data recording area if no user data has been recorded yet on the disc, or at the location that is just after the end of the area containing the recorded user data, that is, the beginning of the unrecorded area.

The Office Action (page 3) states as follows:

> In the above analysis, as disclosed in Muramatsu et al, in a first region, the pca is determined. Subsequently, for further formatting/writing of information onto the disc, this optimum value is further relied upon and used with the appropriate relationship as discussed with respect to figure 3, see col. 4 starting at line 53 till col. 5 line 29 for instance.

Muramatsu, column 4, line 32 through column 5, line 29 states as follows:

> In the present invention, ***audio signal and video signal are recorded on a CD-R shown in FIG. 1A according to CDV-format shown in FIG. 2A. The recording area of CD-R is divided into a first area positioned inner circumferential side of the disc and a second area positioned outer circumferential side of the disc***, as illustrated by the dotted line in FIG. 1A. Based on recording format of CDV, audio signal is recorded in the first area according to CD-format while video and audio signal are recorded in the second area according to LD-format. In the present invention, ***when audio and video signal according to CDV-format is recorded on CD-R, difference of linear velocities between the first area in which audio signal is recorded and the second area in which video signal is recorded is taken into consideration for determining optimum recording power.*** Namely, optimum recording power of the second area is determined by multiplying optimum recording power of the first area by a predetermined constant. Details of determining optimum recording power will be described below, starting from an examination of the relation between optimum recording power and linear velocity of disc rotation.
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> FIG. 3 illustrates the relation between linear velocity of disc rotation in recording process and optimum recording power. As is apparent from FIG. 3, as the linear velocity of disc rotation is increased, an optimum recording power, that is power of light beam required for forming appropriate information pit, has to be increased accordingly. FIG. 3 illustrates a relation between linear velocity of disc rotation and optimum recording power obtained from an experiment using a certain CD-R. From this, it is clear that the optimum recording power is substantially in proportion to the linear velocity of disc rotation. Accordingly, if a first linear velocity is expressed as "CLV_1", a second linear velocity is expressed as "CLV_2", a first optimum recording power is expressed as "P_1" and a second optimum recording

power is expressed as "P_2", the following equation is satisfied:

$$K= P_2 /P_1 \quad (1)$$

For example, with reference to FIG. 3, if the first linear velocity is 1.4 m/s and the second linear velocity is 11.2 m/s, the constant K obtained from the equation (1) is approximately 2.85. FIG. 4 illustrates a relation between linear velocity ratio (CLV_2/CLV_1) and the constant K obtained by fixing the first linear velocity CLV_1 to 1.4 m/s and varying the second linear velocity CLV_2. From FIG. 4, it is also clear that the constant K is in proportion to the linear velocity ratio (CLV_2/CLV_1). Accordingly, if proportional factor is expressed as "α", the following equation is satisfied:

$$K= P_2 /P_1=\alpha\cdot(CLV_2/CLV_1)^n \quad (2)$$

Accordingly, if the first linear velocity and the second linear velocity are determined, the constant K is obtained from the equation (2). Further, if the first optimum recording power P_1 is determined, optimum recording powers suitable for various linear velocities can be obtained using the constant K thus obtained. It is confirmed from experiments that the value n is near 1/2. Among same CD-Rs, dependencies of recording sensitivity to linear velocity are different, and therefore this value 1/2 is not necessarily applicable to all cases. However, since it is confirmed that the optimum recording power and the linear velocity are in proportion, optimum recording power for various linear velocities may be calculated when the constant K is correctly determined from results of experiments.

Thus, Muramatsu, column 4, line 53 through column 5, line 29, proposes an approach for calculating a first optimum recording power for a first linear speed (in the second area in which video signal is recorded) based on a previously determined optimum recording power for a different linear speed (in the first area in which audio signal is recorded).

Thus, in each instance, the optimum recording power determined according to the approach proposed in Muramatsu, contrary to the contention in the Office Action, is not for formatting the optical disc, but rather is for recording audio or video signals.

Takahashi (JP 11-045440), like Muramatsu, involves an optical recording device configured to perform test recording in the PCA of the optical disc, to determine the optimum

recording laser power, just before recording data to the optical disc.

Likewise, the optimum recording laser power determined according to the approach proposed in Takahashi is not for formatting the optical disc, but rather is for recording user data.

Regarding Nakao (US6320832), it is noted that the present application is a divisional of U.S. application S.N. 09/589,792, filed June 8, 2000, which claims the priority of Japanese patent application no. 11-165455 filed June 11, 1999. A certified copy of priority Japanese patent application no. 11-165455 was submitted in parent application S.N. 09/589,792.

On the other hand, the Nakao patent is based on U.S. application S.N. 09/360,970, filed July 27, 1999, after the June 11, 1999 priority date of the present application. Therefore, Nakao cannot render the claims of this application unpatentable.

In any event, Nakao, as understood by Applicant, proposes an approach for controlling laser power for recording user data wherein test writing is performed in an iterative fashion to determine an optimum power for recording in the user recording area. Nakao, Fig. 3, and corresponding discussion starting at column 5, line 45, merely proposes an approach for determine an optimum power in accordance with a bottom power and a peak power of the optimum condition determined through said test writing.

The iterative test writing in the approach proposed by Nakao does not involve writing format information. Further, Nakao does not teach or suggest that a recording power for formatting is or should be derived from such optimum power.

Moreover, Nakao does not suggest any relation between laser power for recording and laser power for formatting.

Kubota, as understood by Applicant, proposes an approach for setting optical disk

recording power and optical disk erasing power wherein a ratio of recording power to erasing power is set to a predetermined value.

In the ninth embodiment (Fig. 17) of Kubota, the initial recording power and erasing power are set initially by multiplying a start point by respective predetermined values, and then the recording power and erasing power are tested and corrected if they are too large.

Tsujino (JP 8-77633), as understood by Applicant, proposes an approach for formatting a magneto-optical recording disk wherein predetermined data corresponding to recording with normal laser power and data corresponding to recording with lower laser power (80% of the power of the normal laser power) are stored in a ROM. When a user specifies a format operation, the system supplies a laser power voltage for elimination of the use field of the magneto-optic disk completely, and then format data is recorded on the magneto-optical disk by low laser power record, followed by utilizing the laser power voltage for playback to read the format data written on the magneto-optical disk playback. If the regenerated format data of a sector does not accurately reflect prestored format data, the sector is deemed to be defective and the address of the sector is written in defective registration field of the magneto-optical disk.

However, none of the cited references teaches or suggests a method for formatting an optical information recording medium, comprising performing a power calibration by a drive, determining a first recording power to be used for recording data, utilizing a result of the power calibration, and (a) setting a second recording power for formatting which is equal to or lower than the first recording power for recording data determined as the result of the power calibration, and formatting the medium by the drive at the second recording power for formatting which is equal to or lower than the first recording power for recording data (claim 9 of the

present application), or (b) determining a second recording power for formatting, by multiplying the first recording power by a coefficient of 1 or less, and formatting the medium by the drive in accordance with the second recording power for formatting (claim 11 of the present application).

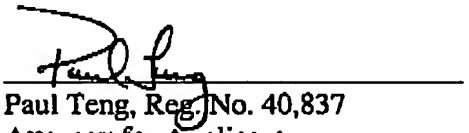
Accordingly, for at least the above-stated reasons, Applicant respectfully submits that independent claims 9 and 11, and the claims depending therefrom, are patentable over the cited art.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Patent Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



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